24. (Six times amended) A p-channel metal-oxide-semiconductor transistor formed on a silicon substrate, comprising:

a $Si_{1-x}Ge_x$ channel region, having a germanium molar fraction of x, and formed in the substrate, underneath a silicon dioxide (SiO_2) gate oxide and between a source region and a drain region;

wherein x is less than or equal to 0.6, and wherein the $Si_{1-x}Ge_x$ channel region forms a continuous $Si_{1-x}Ge_x/SiO_2$ gate oxide interface wherein no germanium oxide is present at the $Si_{1-x}Ge_x/SiO_2$ gate oxide interface as a result of ion implantation of germanium through the previously formed SiO_2 gate oxide.

25. (Five times amended) A p-channel metal-oxide-semiconductor transistor formed on a silicon substrate, comprising:

a $Si_{1-x}Ge_x$ channel region, having a germanium molar fraction of x, and formed in the substrate, underneath a silicon dioxide (SiO_2) gate oxide and between a source region and a drain region, wherein x is less than or equal to 0.6, and wherein the $Si_{1-x}Ge_x$ channel region forms a continuous $Si_{1-x}Ge_x/SiO_2$ gate oxide interface wherein no germanium oxide is present at the $Si_{1-x}Ge_x/SiO_2$ gate oxide interface as a result of ion implantation of germanium through the previously formed SiO_2 gate oxide; and

wherein the $Si_{1-x}Ge_x$ channel region is formed from ion implanting germanium (Ge) into the substrate at a dose of approximately 2×10^{16} atoms/cm^2, and wherein the Ge is implanted at an energy of approximately 20 to 100 keV.

28. (Six times amended) A p-channel metal-oxide-semiconductor transistor formed on a silicon substrate, comprising:

a $Si_{1-x}Ge_x$ channel region, having a germanium molar fraction of 0.2, and formed in the substrate, underneath a silicon dioxide (SiO_2) gate oxide and between a source region and a drain region, wherein the $Si_{1-x}Ge_x$ channel region forms a continuous $Si_{1-x}Ge_x/SiO_2$ gate oxide interface wherein no germanium oxide is present at the $Si_{1-x}Ge_x/SiO_2$ gate oxide interface as a result of ion implantation of germanium through the previously formed SiO_2 gate oxide.

38. (Four times amended) A semiconductor transistor, comprising:

a silicon substrate;

a silicon dioxide (SiO_2) gate oxide, coupled to the substrate;

a gate, coupled to the SiO_2 gate oxide;

source/drain regions formed in the substrate on opposite sides of the gate; and

a $Si_{1-x}Ge_x$ channel region, having a germanium molar fraction of x, and located underneath the SiO_2 gate oxide and between the source/drain regions, wherein x is less than or equal to 0.6, and wherein the $Si_{1-x}Ge_x$ channel region forms a continuous $Si_{1-x}Ge_x/SiO_2$ gate oxide interface wherein no germanium oxide is present at the $Si_{1-x}Ge_x/SiO_2$ gate oxide interface as a result of ion implantation of germanium through the previously formed SiO_2 gate oxide.

40. (Four times amended) A semiconductor transistor formed on a silicon substrate, comprising:

a $Si_{1-x}Ge_x$ channel region, having a germanium molar fraction of 0.2 formed in the substrate, underneath a silicon dioxide (SiO_2) gate oxide and between a source region and a drain region, wherein the $Si_{1-x}Ge_x$ channel region forms a continuous $Si_{1-x}Ge_x/SiO_2$ gate oxide interface wherein no germanium oxide is present at the $Si_{1-x}Ge_x/SiO_2$ gate oxide interface as a result of ion implantation of germanium through the previously formed SiO_2 gate oxide.

41. (Thrice amended) A semiconductor transistor formed on a silicon substrate, comprising:

a $Si_{1-x}Ge_x$ channel region, having a germanium molar fraction of x, and formed in the substrate, underneath a silicon dioxide (SiO_2) gate oxide and between a source region and a drain region, wherein x is less than or equal to 0.6, and wherein the $Si_{1-x}Ge_x$ channel region forms a continuous $Si_{1-x}Ge_x/SiO_2$ gate oxide interface wherein no germanium oxide is present at the $Si_{1-x}Ge_x/SiO_2$ gate oxide interface as a result of ion implantation of germanium through the previously formed SiO_2 gate oxide; and

wherein the $Si_{1-x}Ge_x$ channel region is formed from ion implanting germanium (Ge) into the substrate at a dose of approximately 2×10^{16} atoms/cm^2, and wherein the Ge is implanted at an energy of approximately 20 to 100 keV.